

REMARKS

Upon entry of the present amendment, claims 1-10 will remain pending in the above-identified application and stand ready for further action on the merits.

The amendments made herein to the claims do not incorporate new matter into the application as originally filed. For example, the amendment to claim 1 finds support in original claim 5, and the amendment to claim 5 finds support in previously amended claim 1, and at page 11, lines 7-8 of the specification. Claim 8 has also been amended to improve the grammatical format of the claim, based on a "specific suggestion" made by the Examiner in the prior office action. Accordingly, entry of the present amendment is respectfully requested.

Claim Rejections Under 35 USC § 112, Second Paragraph

In the outstanding office action the examiner rejects claims 9-10 as being indefinite under the provisions of 35 USC § 112, second paragraph. Reconsideration of the rejection is requested due to the fact that each of claims 9-10 (and claim 7 from which they each depend) is directed to "a polishing process for a substrate to be polished".

For completeness it is also noted that it is claim 8 (and not claim 7) that recites "a process for improving a rate for polishing a substrate to be polished".

Claim Rejections Under 35 USC § 103(a)

Claims 1-10 have been rejected under 35 USC § 103(a) as being unpatentable over EP 1 020 501. Reconsideration and withdrawal of the rejection is respectfully requested based upon the following considerations.

Basic Requirements - Prima Facie Case of Obviousness

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the

prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Present Invention and Its Advantages

The present invention provides a polishing composition, which comprises polymer particles and inorganic particles in an aqueous medium, wherein the inorganic particles have an average particle size and properties as recited in Example 1.

The polishing composition of the present invention can be favorably used in polishing the substrate for precision parts, including semiconductor substrates; substrates for magnetic recording media such as magnetic disks, optical disks and opto-magnetic disks; photomask substrates; glass for liquid crystals; optical lenses; optical mirrors; optical prisms; and the like.

Further, the present invention relates to a polishing composition capable of polishing a substrate to be polished made of silicon, glass, an oxide, a nitride or a metal, or a coated substrate thereof at a high rate, and generating little scratches, a polishing process for a substrate to be polished with the polishing composition, and a process for increasing a rate for polishing a substrate to be polished with the polishing composition.

Distinctions over the Cited Art

In the present invention polishing rates are remarkably increased by using colloidal silica, as inorganic particles, having an average particle size of 5 to 170 nm together with polymer particles satisfying $D_p \leq D_i + 50$ nm.

The Examiner's attention is directed to Table 3 (see page 30), Figure 2 and description at page 31, lines 1-16 of the specification. Upon reviewing the same, the Examiner will understand that by merely combining inorganic particles and polymer particles, polishing rates are not increased. Instead, in order to increase polishing rates, it is necessary to meet the limitation of $D_p \leq D_i + 50$ nm as is recited in the pending claims (see claim 1).

More particularly, upon review of Table 3, Figure 2 and page 31, lines 1-16 of the instant specification, the Examiner will understand that the compositions of Examples 2, 3, 5 and 8-11 have remarkably increased polishing rates as compared to those of the compositions of Comparative Examples 2-4, which are composed only of inorganic particles. Moreover, the Examiner will see that in Comparative Examples 7-10, where the average particle size D_p of the polymer particles exceeds $D_i + 50$, even though polymer particles are formulated therein, the polishing rate remains

substantially at the same level as, or is rather lowered, as compared to the case of only the inorganic particles.

Additionally, the results of the average particle size D_p of the polymer particles and the average particle size D_i of the inorganic particles in connection with polishing rates in both of Examples 1-3 and 5-11 and Comparative Examples 7-10 are shown in Figure 2 of the instant specification. It can be seen in Figure 2 that all of Examples 1-3 and 5-11, which satisfy the formula $D_p \leq D_i + 50 \text{ nm}$, have increased polishing rates; whereas Comparative Examples 7-10 (which do not satisfy the above formula) did not experience increased polishing rates.

Accordingly, it is submitted that unexpected results are clearly shown and evidenced by the noted disclosure in the instant application (i.e., Table 3, Figure 2, and page 31, lines 1-16).

In contrast to the instant invention, EP '501 refers to "silica" at [0053] and *fumed silica* is used in the example at [0126], and it fails to disclose colloidal silica. This is an important distinction, since *fumed silica* generally has a larger particle size so that polishing rates using *fumed silica* are high, but scratching tends to occur, and conversely, that *colloidal silica* has a smaller particle size so that polishing rates using *colloidal silica* are low, but less scratching tends to occur.

Importantly, the present invention relates to polishing compositions (and methods using the same), which contain colloidal silica, wherein polishing rates are increased without increasing scratching. Such an achievement is never taught, described or otherwise provided in the cited EP '501 reference of record.

Furthermore, EP '501 refers to the Sp/Si ratio being 0.01 - 0.95 and states at [0057] that if the mean particle size of the polymer particles exceeds the mean particle size of the inorganic particles, the polishing rate tends to be particularly low. By contrast, in the present invention, even if the mean particle size of the polymer particles exceeds the mean particle size of the inorganic particles, polishing rates are excellent so long as the formula $D_p \leq D_i + 50 \text{ nm}$ is satisfied.

Further to the above, in Examples 2-3, 8-9 and 11 of the present application, the mean particle size of the polymer particles is indeed larger, and such Examples show excellent polishing rates. The relationship between the mean particle size of inorganic particles (colloidal silica) and polishing rates as recited in the pending claims is completely different from the disclosure of EP '501, which merely discloses fumed silica. Thus, the present invention is completely different from the disclosure of the EP '501 reference, and one of ordinary skill in the art

would in no way be motivated based on the disclosure of the EP '501 reference to arrive at the instant invention as claimed. Absent such motivation in the cited art, the Examiner's rejection is not sustainable.

Accordingly, based upon the above remarks and the amendments made herein, reconsideration and withdrawal of each of the Examiner's outstanding rejections is respectfully requested under the provisions of Title 35 of the United States Code.

CONCLUSION

Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of the pending claims 1-10 are allowable at present.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey (Reg. No. 32,881) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees

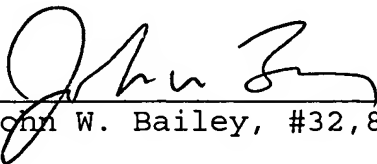
Reply Under 37 CFR § 1.111,
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Appl. No. 10/668,216

required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of
time fees.

Respectfully submitted,

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By 
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